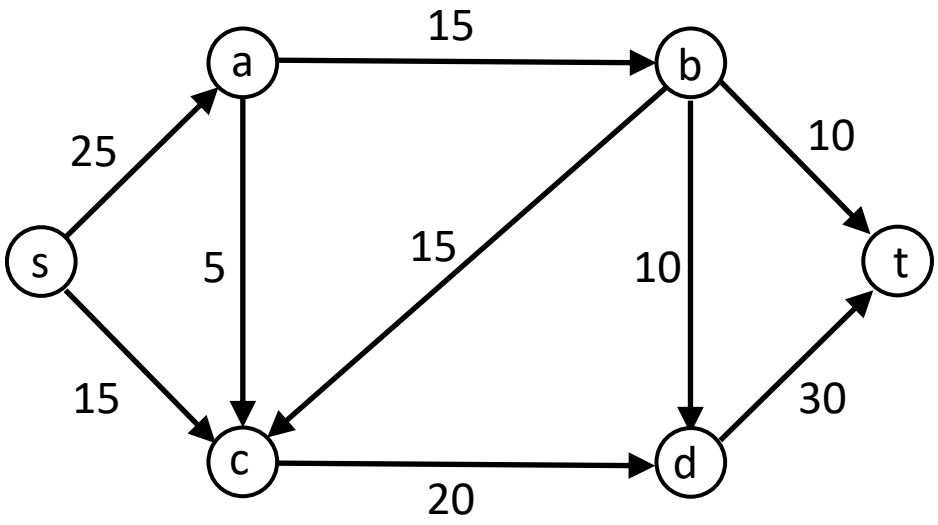
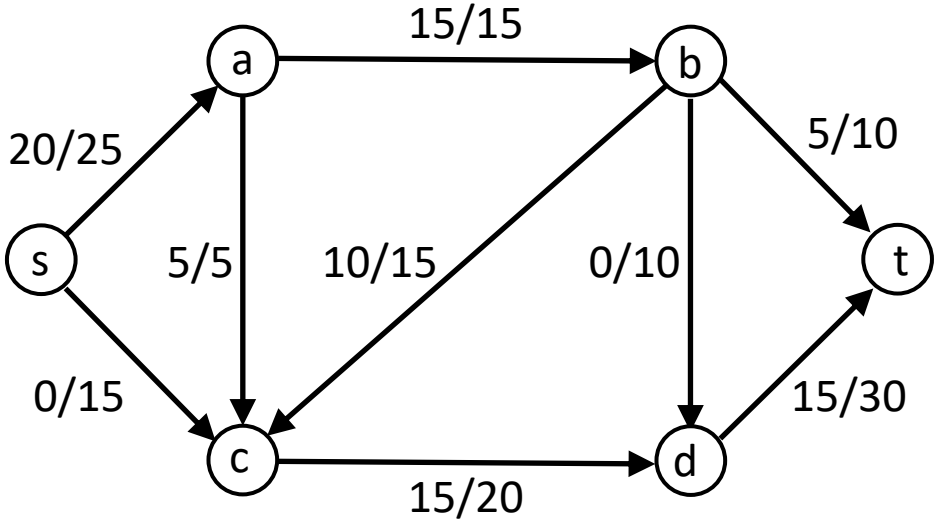
A flow network $\mathcal{F}$

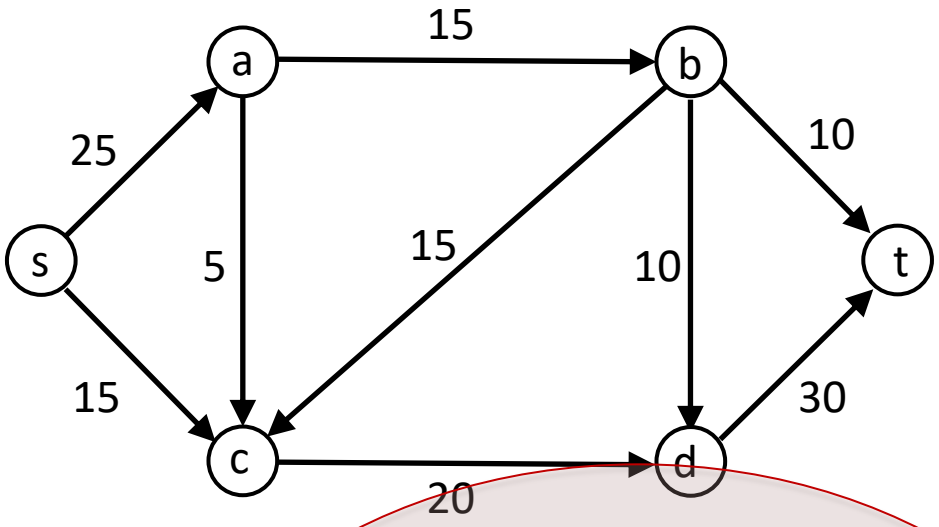


A flow f in the network $\mathcal{F}$

$V(f) = 20$

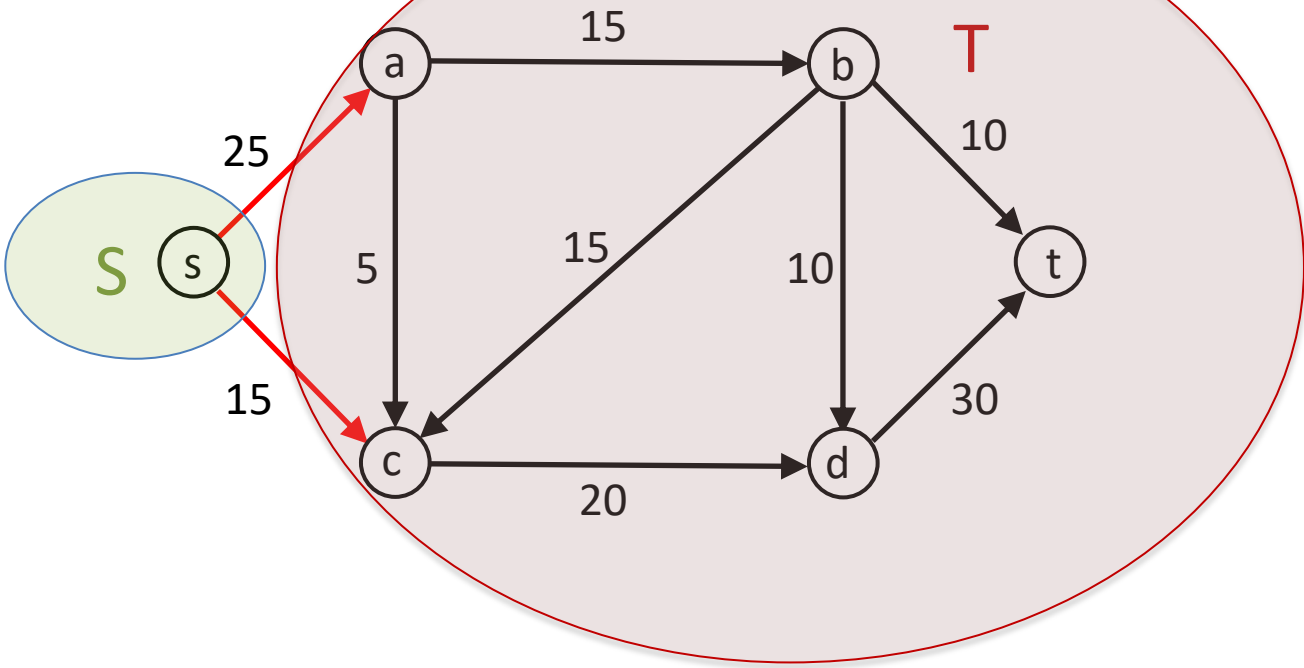


A flow network $\mathcal{F}$

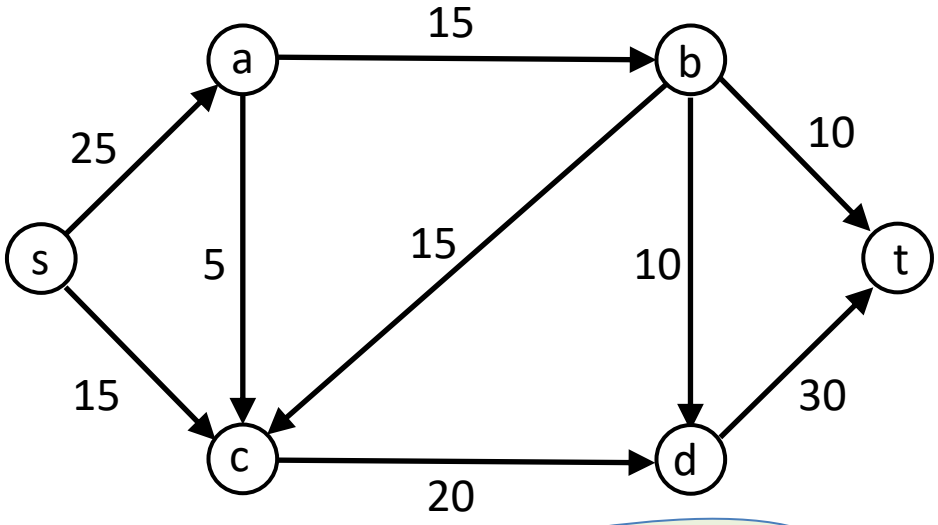


A cut (S, T)

$c(S, T) = 40$

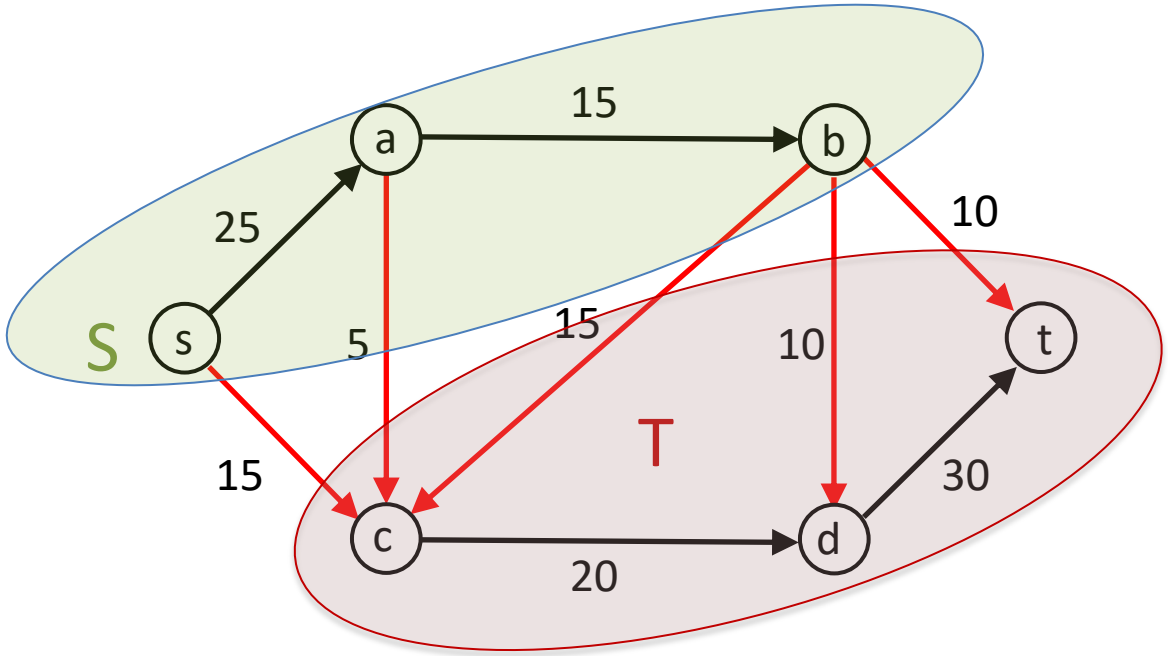


A flow network $\mathcal{F}$

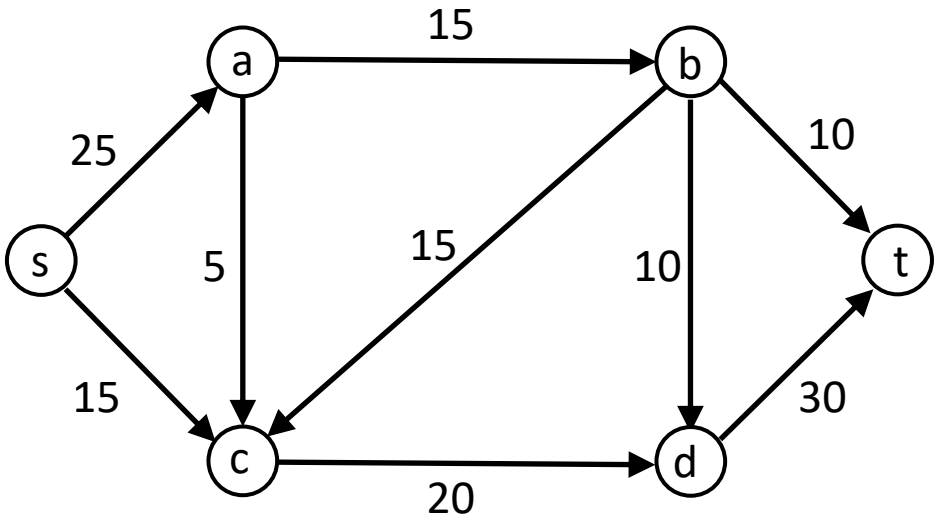


A cut (S, T)

$c(S, T) = 55$

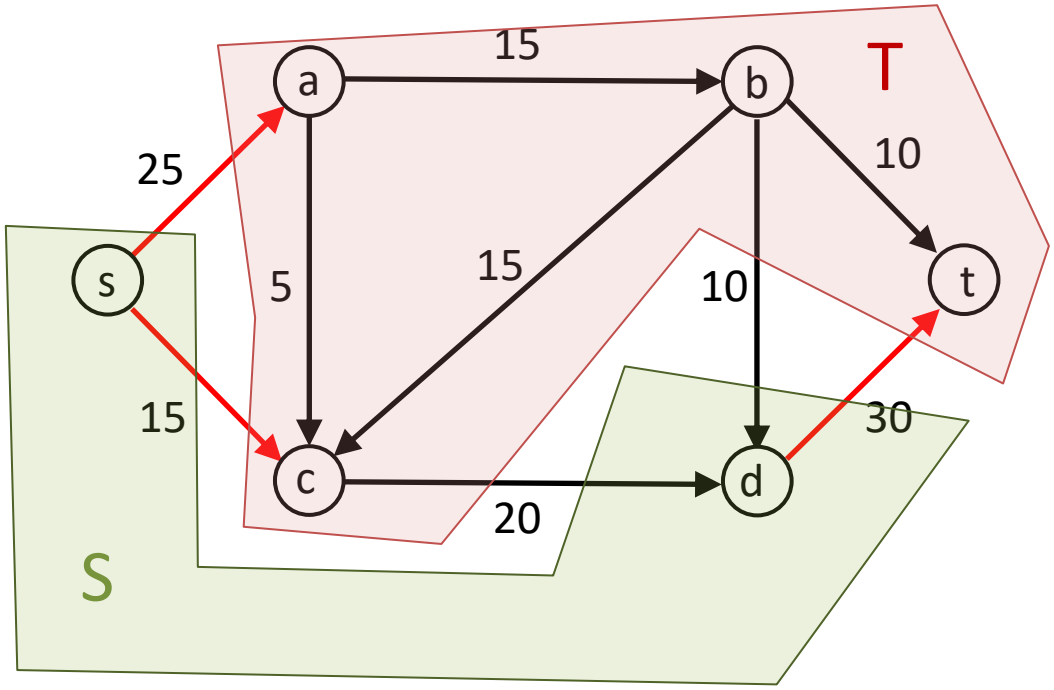


A flow network $\mathcal{F}$



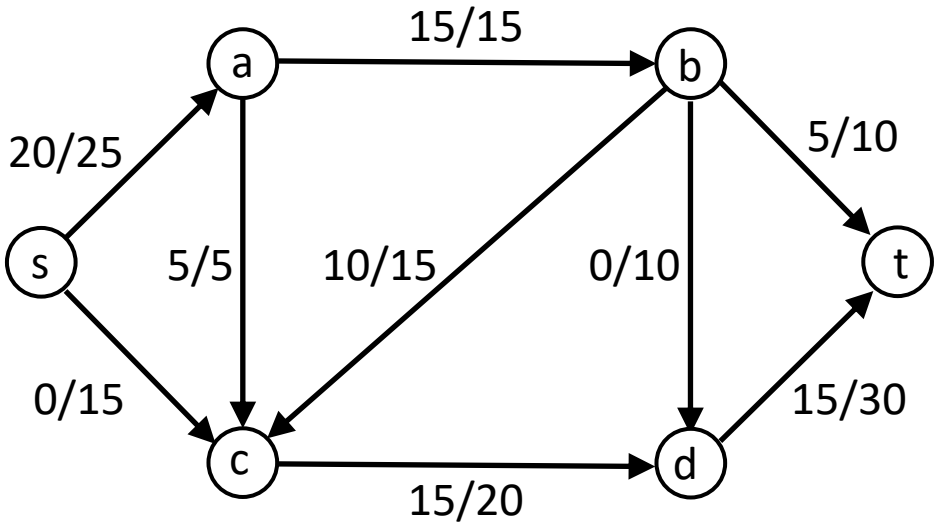
A cut (S, T)

$c(S, T) = 70$



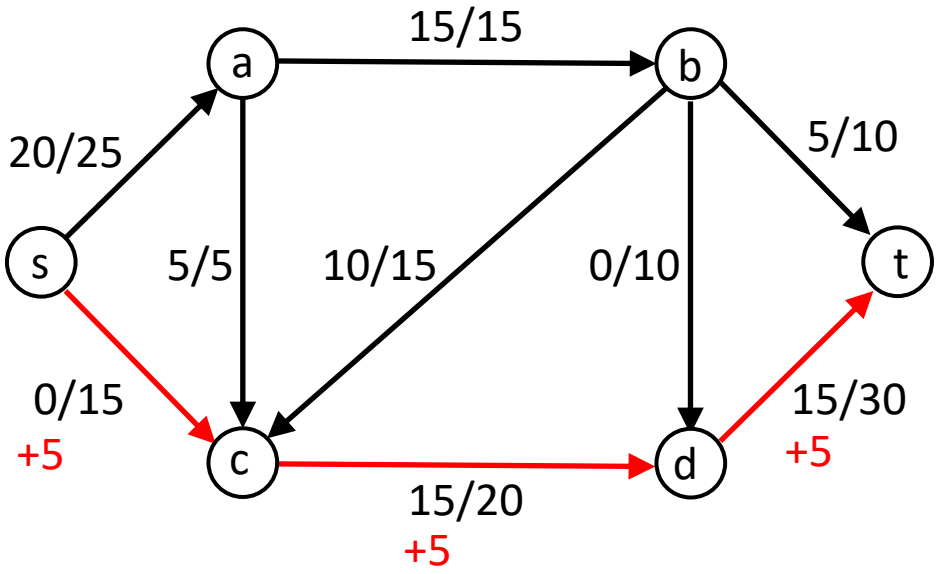
A flow f

$\mathcal{V}(f) = 20$



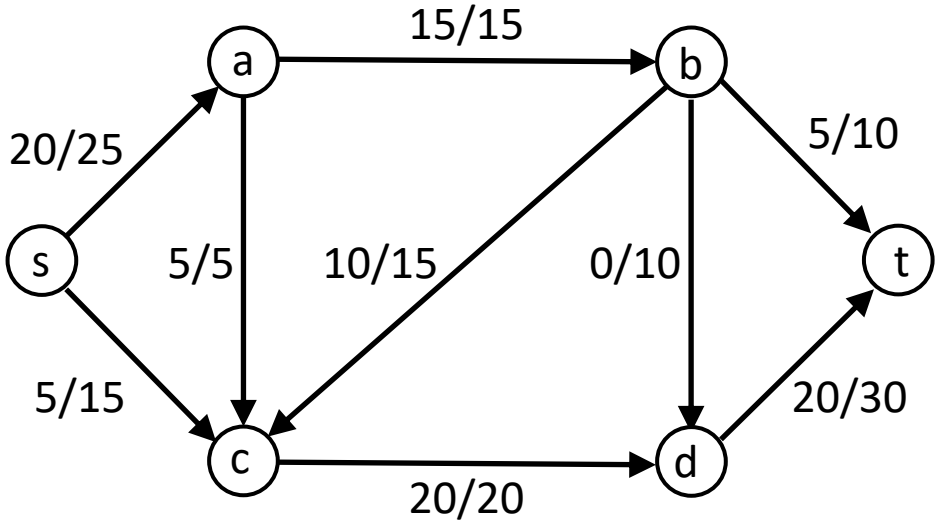
flow f

$\mathcal{V}(f) = 20$

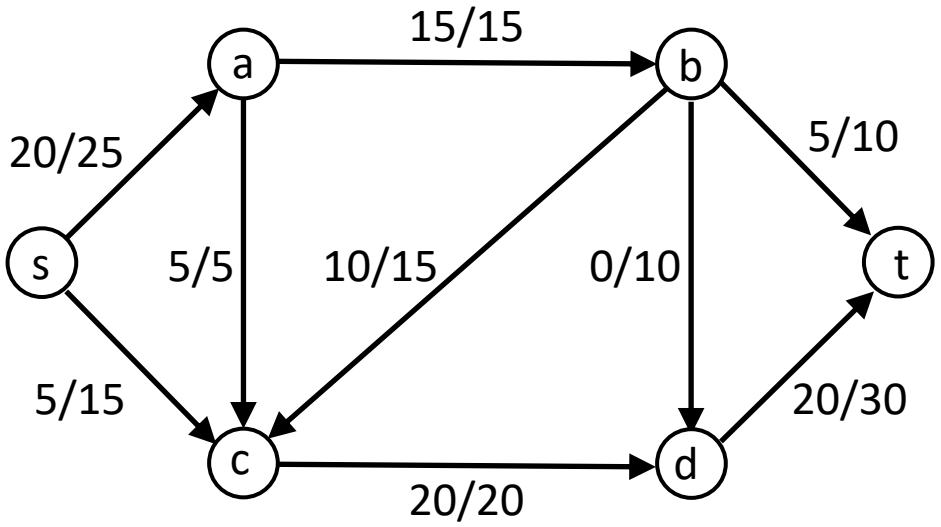


improved flow f'

$\mathcal{V}(f') = ?$

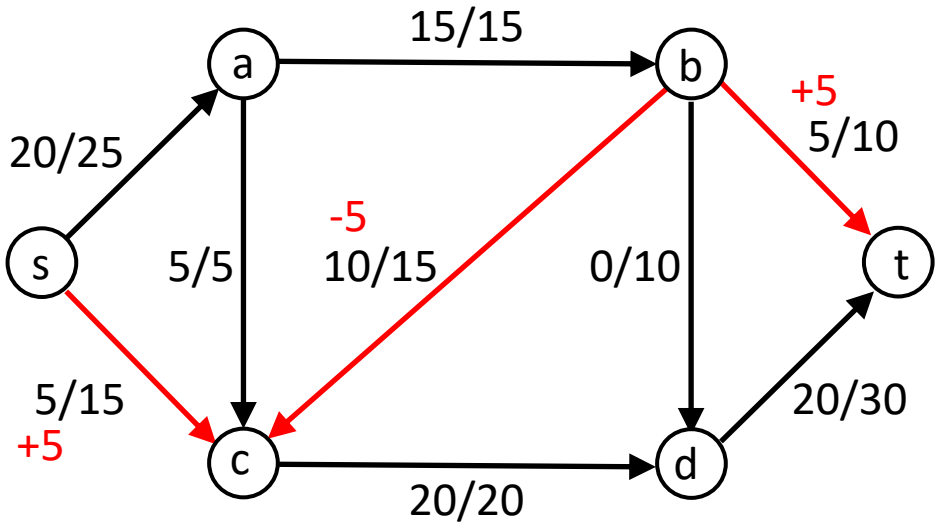


flow f'
$\mathcal{V}(f') = 25$



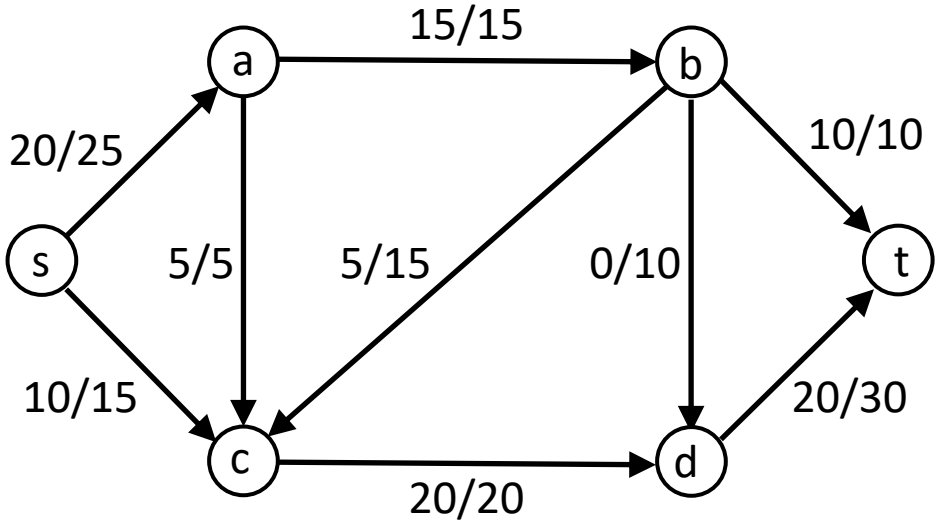
flow f'

$\mathcal{V}(f') = 25$



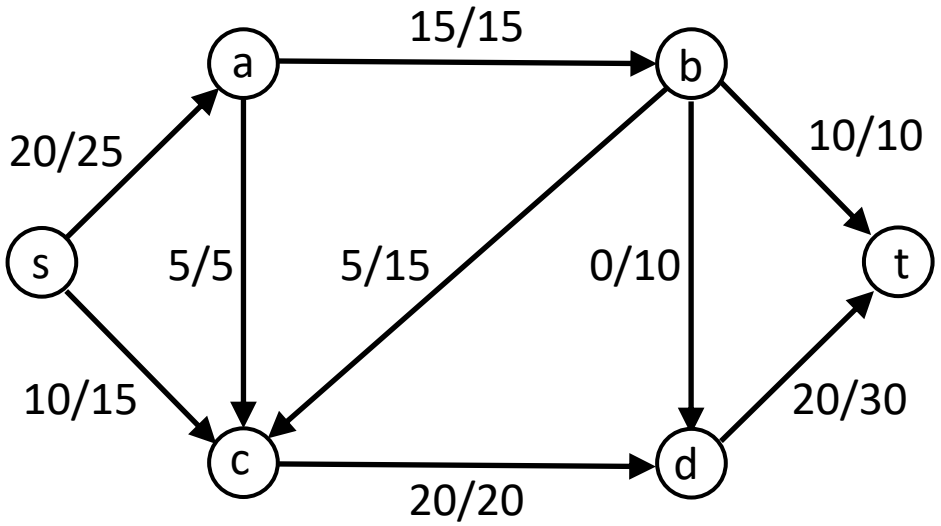
improved flow f''

$\mathcal{V}(f'') = ?$



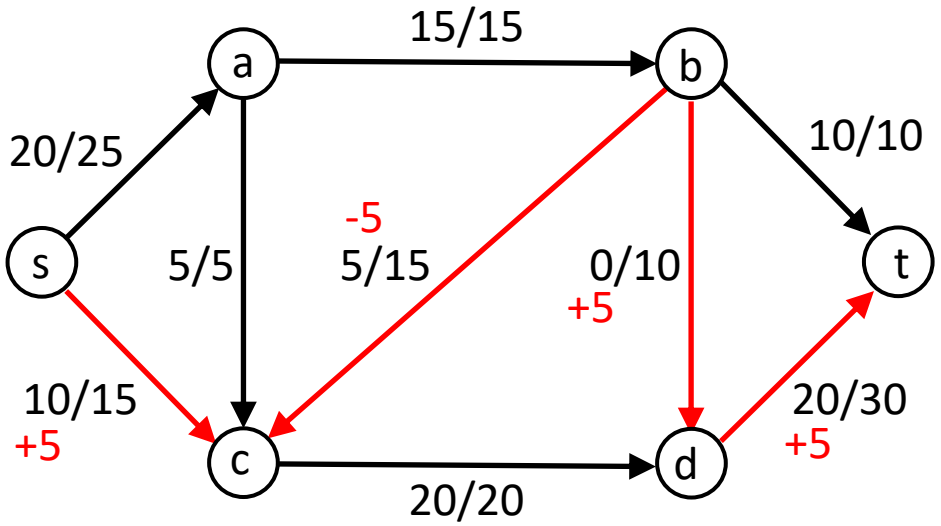
flow f''

$\mathcal{V}(f'') = 30$



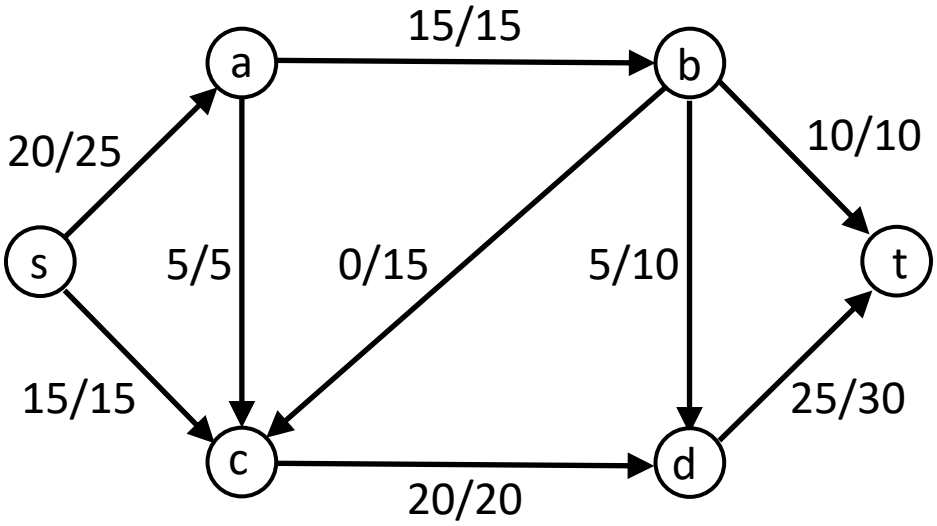
flow f''

$\mathcal{V}(f'') = 30$



flow f'''

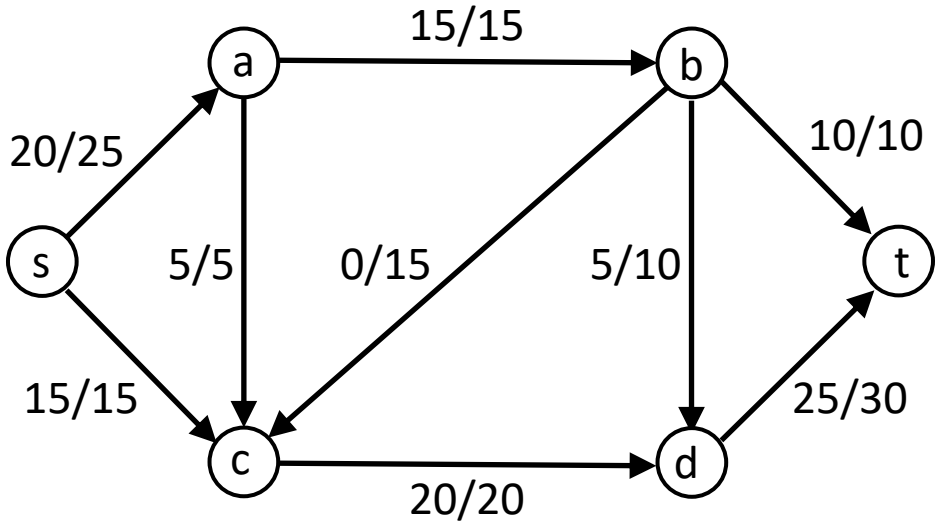
$\mathcal{V}(f''') = ?$



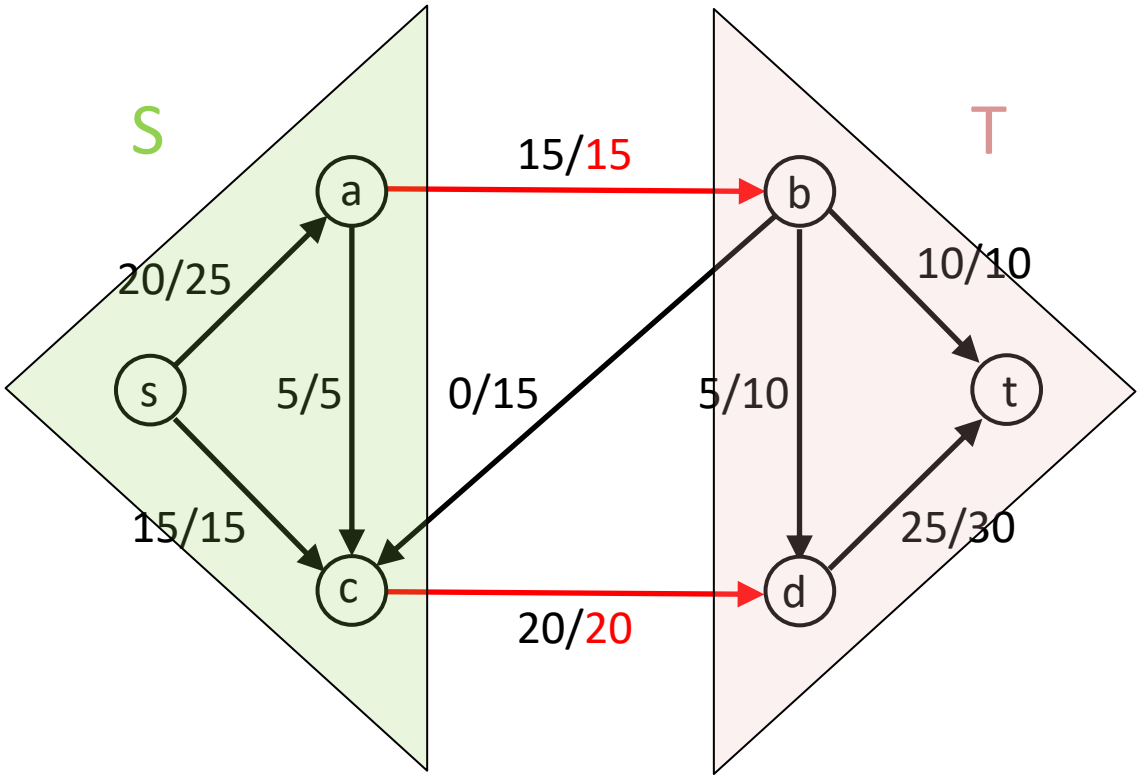
flow f'''

$\mathcal{V}(f''') = 35$

maximum!



flow f'''
$\mathcal{V}(f''') = 35$
maximum!



capacity of (S,T) cut = 35
no flow can have value that exceeds this
$\Longrightarrow f'''$ is maximum flow

instance of <u>general important property</u>:
(value of) max flow = (capacity of) min cut